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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/802,816

03/18/2004

Masahiko Ogino

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07/10/2008

ANTONELLI, TERRY, STOUT & KRAUS, LLP

1300 NORTH SEVENTEENTH STREET

SUITE 1800

ARLINGTON, VA 22209-3873

EXAMINER

DANIELS, MATTHEW J

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

07/10/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/802,816

Applicant(s)

OGINO ET AL.

Examiner

MATTHEW J. DANIELS

Art Unit

1791

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-11, 24 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-11, 24 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 April 2008 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 3-5, 7-10, 24, and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi (US 2002/0094496) in view of Rowe (US 2201302). **As to Claim 5**, Choi teaches a nanoprint mold comprising a structure including a pattern member having a concave-convex pattern, and being provided with a deep groove (402), which would be deeper than concave portions of the convex-concave pattern.

Choi is silent to a laminate structure, the base member having a curved surface, and the groove being provided at the center of the mold.

However, Rowe teaches that in using a stamp, it is known to provide a laminate structure and a curved surface (19, 24, 13). With respect to the groove and its location on the mold, since

the groove of Choi is described as an entrainment channel, it would have been obvious to place the channel anywhere that portions of resin were to be maintained separate (without intermixing). As such, the placement of the entrainment channel is a matter of design choice, and one would have been motivated to place the groove at the center in order to divide the stamp into different quadrants and to eliminate mixing of the resist from those various regions.

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the stamp of Rowe into that of Choi because one would recognize the Rowe techniques as applicable to the similar Choi method which would provide the expected result that the stamp would be capable of conforming to curved surfaces, thereby increasing the applicability of the stamp.

As to Claims 3 and 4, in the Rowe process, a portion of the center is larger in thickness than the periphery (Fig. 4). However, Rowe suggests that this configuration is chosen merely because the particular embodiment is performed on a spherically concave surface. However, in view of the teachings of Rowe, one would have found it obvious to adjust the stamp configuration to also print on convex surfaces. Once it is recognized that the stamp may be adjusted to print onto concave surfaces, one would have also found it obvious to provide the opposite configuration as recited in Claim 4. **As to Claim 7**, Choi teaches a transparent template ([0007]). **As to Claims 8-10**, Rowe teaches that it is known to provide a flexible mold secured to a support by a substance which is interpreted to be an elastomer (page 1, right col., line 40) in a circular configuration (Fig. 3). **As to Claims 24 and 25**, the deep groove of Choi is recognized as an entrainment channel, which would facilitate separation from various portions of the mold. Selection of the particular configuration would be dependent on the areas that are sought to be

separated. The groove disclosed by Choi is open to the periphery already (Fig. 4, item 402), and use of additional deep grooves to separate the wafer into quadrants would have been obvious.

3. **Claims 6 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi (US 2002/0094496) in view of Rowe (US 2201302), and further in view of Chou (US 2002/0132482). As to Claim 6, it is unclear if Claim 6 is limiting on the invention of Claim 5 since peripheral components such as heating and pressing mechanisms do not further limit a mold. However, Choi is silent to the heating. However, Chou teaches that several means can be used interchangeably to soften or cure the film such as UV and heating ([0027]). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of Chou into that of Choi since Choi teaches UV curing ([0135]), and Chou teaches that UV and heat can be used additionally or interchangeably with UV ([0027]). **As to Claim 11**, Choi is silent to the elastomeric edge to facilitate release. However, Chou teaches a peripheral elastomeric gasket which separates the mold from the material to be imprinted (Fig. 3, item 32, [0027]). Since the mold would compress into the material to be imprinted (the material on item 20), which would require compression of the gasket, removal of the mold from the resist would also be assisted by the gasket. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the gasket of Chou into the stamp of Choi in order to allow for imprinting by external fluid pressure.

Response to Arguments

4. Applicant's arguments filed 17 April 2007 have been fully considered but they are not persuasive or are moot in view of the rejections above. The arguments appear to be on the grounds that the claims now recite a groove with particular configurations not disclosed by Kamihara. However, this argument is not persuasive since grooves are conventionally used in the nanoimprint field as entrainment channels. See Choi (2002/0094496). In separating various portions of a nanoimprint mold, it would have been obvious to provide entrainment channels at any desired location. Although there is also some discussion that Kamihara does not provide a "nanoprint" mold, there is no particular definition in the specification as to the size range enclosed by "nanoprint." Additionally, since this argument pertains merely to the size of the features on the mold, it is not persuasive since one would have recognized that size features on a stamp or mold may be widely adjusted or varied.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. DANIELS whose telephone number is (571)272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew J. Daniels/
Primary Examiner, Art Unit 1791
7/7/08